

AMENDMENTS TO CLAIMS

Listing of Claims:

Claim 1 (Currently amended): A method for characterizing piezoelectric sensor signal responses for automotive vehicle crash analysis, said method comprising:

providing at least one piezoelectric sensor mounted at a predetermined locations on the automotive vehicle;

sampling a response from the piezoelectric sensor for a predetermined period of time;

subjecting the response from the piezoelectric sensor to a wavelet analysis and obtaining signal amplitudes;

plotting the signal amplitudes in three-dimensional space and forming a cluster of signal amplitudes;

comparing a most recent cluster to reference clusters that are indicative of both crash and non-crash events; and

providing appropriate instructions to an occupant restraint control system in the automotive vehicle.

Claim 2 (Original): The method of claim 1, further comprising providing three polyvinylidene fluoride piezoelectric sensors mounted at predetermined locations on a transparency product of the automotive vehicle.

Claim 3 (Original): The method of claim 2, wherein the transparency product is a windshield.

Claim 4 (Original): The method of claim 3, comprising applying a Daubechies transfer function in the wavelet analysis.

Claim 5 (Original): A method for characterizing piezoelectric sensor signal responses for automobile crash analysis, said method comprising:

providing at least three polyvinylidene fluoride piezoelectric sensors;

mounting the three polyvinylidene fluoride piezoelectric sensors on a windshield of the automobile;

sampling responses from the three polyvinylidene fluoride piezoelectric sensors to a Daubechies wavelet analysis and obtaining Daubechies amplitudes for each polyvinylidene fluoride piezoelectric sensor;

aggregating the Daubechies amplitudes from the three polyvinylidene fluoride piezoelectric sensors and plotting the intersection of the Daubechies amplitudes and forming a cluster of the Daubechies amplitudes.

Claim 6 (Original): The method of claim 5, comprising providing a fourth polyvinylidene fluoride piezoelectric sensor.

Claim 7 (Original): The method of claim 5, comprising incorporating the fourth polyvinylidene fluoride piezoelectric sensor into a rear-view mirror mounting button of the automobile.

Claim 8 (Original): The method of claim 5, further comprising using orthogonal single-axis polyvinylidene fluoride piezoelectric sensors.

Claim 9 (Original): The method of claim 5, further comprising using a dual signal path integrated circuit for sampling responses from the polyvinylidene fluoride piezoelectric sensors.

Claim 10 (Original): The method of claim 5, wherein at least one application-specific integrated circuit controls the method.

Claim 11 (Original): The method of claim 10, further comprising locating the at least one application-specific integrated circuit in at least one piezoelectric sensor.

Claim 12 (Original): The method of claim 10, further comprising locating the at least one application-specific integrated circuit within the occupant restraint control system.

Claim 13 (Currently amended): ~~A system for controlling deployment of airbags in an automotive vehicle;~~ The method of claim 1, further comprising:
 ~~three polyvinylidene fluoride piezoelectric sensors;~~
 ~~a means for sampling responses from the piezoelectric sensors for a predetermined period of time;~~
 ~~a means for applying wavelet analysis to the responses to obtain signal amplitudes;~~
 ~~a means for combining the signal amplitudes and plotting a commonality point of the signal amplitudes in three-dimensional space;~~
 ~~a means for comparing commonality points of most recent signal amplitudes to a library including a memory of reference commonality points of signal amplitudes; and~~
 ~~a means for instructing deployment of the airbags at least one airbag using results from comparing the most recent commonality points of signal amplitudes to the reference commonality points of signal amplitudes.~~

Claim 14 (Currently amended): A method for characterizing a response from a sensor used for automotive vehicle crash analysis, said method comprising:
 providing at least one sensor mounted at a predetermined location on the automotive vehicle;
 sampling a response from the sensor for a predetermined period of time;
 subjecting the response from the sensor to a wavelet analysis and obtaining signal amplitudes;
 plotting the signal amplitudes in three-dimensional space and forming a cluster of signal amplitudes;
 comparing a most recent cluster to reference clusters that are indicative of both crash and non-crash events; and
 providing ~~appropriate~~ instructions to an occupant restraint control system in the automotive vehicle.

Claim 15 (Original): The method of claim 14, wherein the sensor is a piezoelectric sensor.